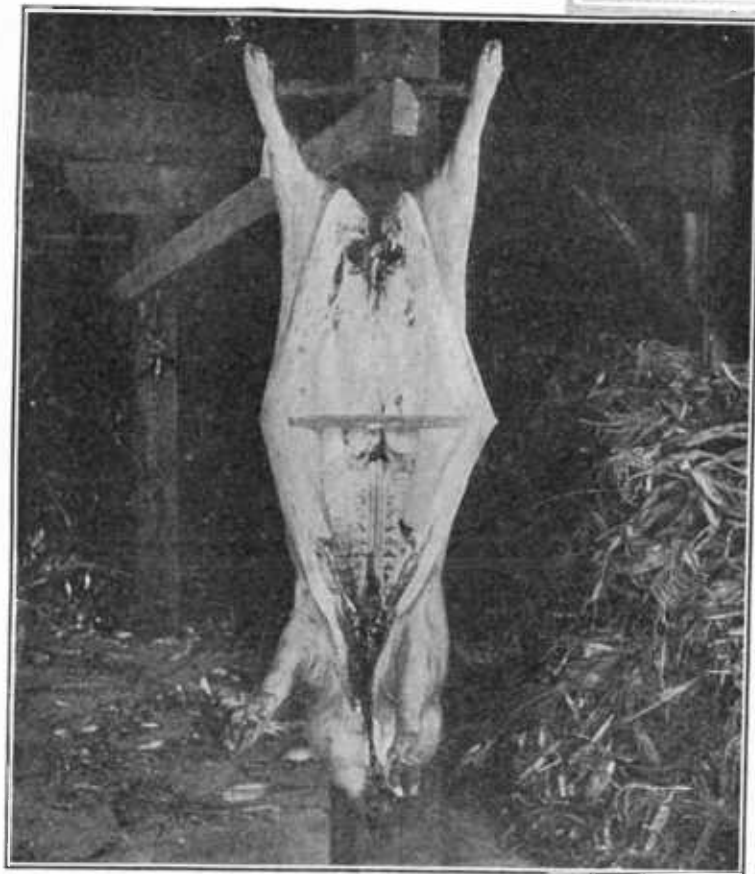


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KILLING HOGS
AND CURING PORK

F. G. ASHBROOK and G. A. ANTHONY
Animal Husbandry Division



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A. D. MELVIN, Chief

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CHOICE HAM AND BREAKFAST BACON can be produced by the farmer for much less than the cost of purchased meat.

The cheapest meat a farmer can use is the product of his own farm.

This is also true of the suburban or town farmer who fattens one or two hogs on kitchen and truck-garden wastes.

Home-cured pork of the right kind always has a ready market and in many cases it will prove to be the best way to market hogs.

The home curing of pork is a good practice and should be more extensively adopted.

This publication explains how to slaughter hogs and cure pork. Butchering and cutting up the carcass, lard rendering, brine and dry curing, smoking, and sausage making are discussed in the following pages.

KILLING HOGS AND CURING PORK.

CONTENTS.

	Page.		Page.
Selection of hogs for butchering.....	3	Curing pork.....	14
Treatment before slaughter.....	4	Sausage.....	18
Equipment for slaughtering.....	5	Smoking cured meat.....	23
Killing and dressing.....	5	Shipper's certificate.....	27
Cooling the carcass.....	9	Economic suggestions.....	28
Cutting up hogs.....	9	Keeping fresh meat.....	29
Rendering lard.....	13	A small ice house.....	29

TOO MANY FARMERS buy a part or all of their supply of meat from local stores and hucksters. Meat and animals, especially hogs, can be raised and the meat cured at home for much less than the cost of the purchased meat, to say nothing of a ready market for good country-cured hams, shoulders, and sides. In spite of these facts, however, the practice of purchasing cured meats has increased among farmers. It may not be practicable for every farmer to butcher and cure his own meat, but in nearly every community a few farmers could do it and make good profits. Farmers who sell country-cured meats have very little difficulty in establishing a permanent trade. To accomplish it one must understand the kind of cured meat the trade demands. A well-marbled, juicy, savory piece of meat showing the proper admixture of fat and lean, properly cured and possessing a good flavor, is the kind the consumer desires.

SELECTION OF HOGS FOR BUTCHERING.

HEALTH.

In selecting hogs for butchering, health should have first consideration. Even though the hog has been properly fed and carries a prime finish, the best quality of meat can not be obtained if the animal is unhealthy; there is always some danger that disease may be transmitted to the person who eats the meat. The keeping quality of the meat is always impaired by fever or other derangements.

CONDITION.

A hog in medium condition, gaining rapidly in weight, yields the best quality of meat. Do not kill a hog that is losing flesh. A reasonable amount of fat gives juiciness and flavor to the meat, but large amounts of fat are not essential.

QUALITY.

The breeding of animals plays an important part in producing a carcass of high quality. Selection, long-continued care, and intelligent feeding will produce meat of desirable quality. The smooth, even, and deeply fleshed hogs yield the nicely marbled meat.

AGE FOR KILLING.

The meat from very young hogs lacks flavor and is watery. Old meat is generally very tough. The meat of old hogs can be improved,

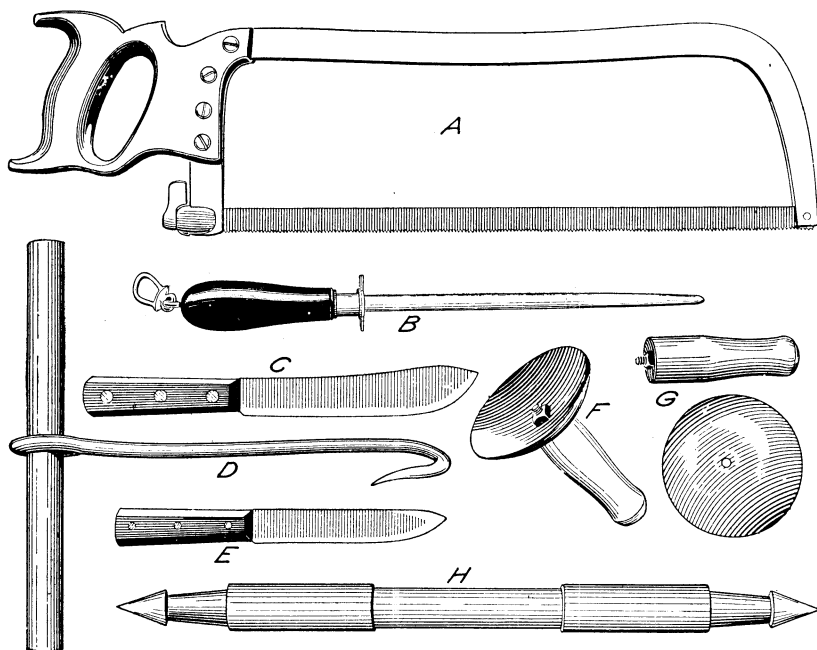


FIG. 1.—Tools for killing and dressing hogs. A, meat saw; B, 14-inch steel; C, cutting knife; D, hog hook; E, 8-inch sticking knife; F, bell-shaped stick scraper; G, separate parts of stick scraper; H, gambrel.

however, if they are properly fattened before slaughter. Hogs can be killed for meat any time after 8 weeks, but the most profitable age at which to slaughter is from 8 to 12 months.

TREATMENT BEFORE SLAUGHTER.

Hogs intended for slaughter should not be kept on full feed up to the time of killing. It is better to hold them entirely without feed for 18 or 24 hours prior to that time, but they should be allowed all the fresh water they will drink. This treatment promotes the elimination of the usual waste products from the system; it also helps to clear the stomach and intestines of their contents, which in turn facilitates the dressing of the carcass and the cleanly handling and separation of the viscera. No animal should be whipped or excited prior to slaughter.

EQUIPMENT FOR SLAUGHTERING.

It is essential to have the proper equipment for rapid and skillful work at killing time: An 8-inch straight sticking knife, a cutting knife, a 14-inch steel, a hog hook, a bell-shaped stick scraper, a gambrel, and a meat saw (fig. 1). More than one of each of these tools may be necessary if many hogs are to be slaughtered and handled to best advantage. A barrel is a very convenient receptacle in which to seald hogs. The barrel should be placed at an angle of about 45° at the end of a table or platform of proper height. The table and barrel should be fastened securely to keep the workmen



FIG. 2.—Position for sticking the hog.

from slipping. A block and tackle will reduce labor. All the tools and apparatus should be in readiness before beginning.

KILLING AND DRESSING.

Ordinarily it is not necessary to stun or shoot a hog before sticking, although it is done in some localities for humane reasons. If the hog is stuck without being stunned, he should be squarely on his back when stuck. Two men can reach under and grasp the legs on the opposite side of the body and with a quick jerk turn the hog over on his back. One man can stand astride the body with his legs just back of the hog's shoulders, taking a good grip on the forelegs (fig. 2). In this position the hog can be held in place while the other man does the sticking.

STICKING.

A narrow, straight-bladed knife, 8 inches long, serves very well for sticking a hog. The knife should be pointed directly toward the root of the tail and held in a line with the backbone. Thrust the knife in 6 or 8 inches directly in front of the breastbone. The knife should be kept in a straight line so as not to stick a shoulder, causing blood to clot, which results in waste in trimming or a shoulder which keeps poorly. After the knife has been inserted 6 or 7 inches, turn it and withdraw. This severs the arteries in the neck and insures better bleeding. Avoid sticking the heart, for in that case the blood



FIG. 3.—A convenient arrangement for scalding.

will not be pumped from the arteries. After sticking, the hog may be turned over on one side.

SCALDING AND SCRAPING.

The most convenient vessel in which to heat water for scalding is a large caldron or a kettle built for scalding hogs and placed over a fire near the place of butchering. If the hog is not too large a barrel may be used for scalding. The arrangement for most efficient scalding is shown in fig. 3 and is described in the paragraph entitled "Equipment for slaughter." If the barrel is not of sufficient size to accommodate the hog, a blanket or several sacks may be laid over the carcass and scalding water poured over it. The blanket or sacks will retain the moist heat long enough to loosen the hair.

If the water is heated in the house it should be boiling when removed from the stove and carried to the place of scalding. At the

time the hog is scalded the water should be at a temperature of from 145° to 155° F. If no thermometer is at hand, stick the finger into the water three times in rapid succession, and if it burns severely the third time the water is about right. If the water is too hot the hair may set, causing even more trouble than if too cold. A teaspoonful of lye or a small shovelful of wood ashes added to every 30 gallons of water will aid in removing the scurf. After either one of these alkalies is added the water should be stirred thoroughly.

If the barrel is used insert the hog hook in the lower jaw, place the hog on the table, and slide it into the barrel (fig. 3). The rear end of the hog is scalded first for the reason that if the water is too hot and the hair sets it can be removed more easily from the rear than from the fore part. The hog should be kept moving in the water to be sure that no part will rest against the side of the barrel. Occasionally the hog should be drawn out of the water to air, when the hair may be "tried." When the hair and scurf easily slip from the surface, scalding is complete. Pull the hog out upon the table and remove the hair and scurf from the legs and feet at once. The simplest way to do this is to twist the legs in both hands. Use the hog hook to remove the dewclaws at the same time. Remove the hair and scurf from the rear end of the hog by means of a bell-shaped scraper.

The same test for determining whether scalding has continued long enough may be used when blankets or sacks are used, and the dressing of the carcass should also proceed in the same manner.

Cut the skin for about 3 or 4 inches just below the hocks in both hind legs. Loosen the tendons and insert the gambrel. Be sure that both tendons in each leg are loosened before inserting the gambrel. Then scald the front part of the hog. After the front part of the hog is scalded pull it out on the table as before. Remove the hair and scurf immediately from the ears, forelegs, and head, as those parts cool very quickly. Use the bell-shaped scraper to remove the remaining hair and scurf. If the hair fails to yield in any particular part, cover that portion with a gunny sack and pour on hot water. When most of the hair and scurf is removed pour hot water over the entire carcass and by means of a knife shave off the hair that is left. Hang the hog up, pour a bucketful of cold water over it, and scrape off the remaining dirt or scurf. Much of the heavy labor may be avoided by means of a hoist, such as a block and tackle, for lifting the hog.

REMOVING ENTRAILS.

After the hog is hung up and the surface is clean the next step is to remove the entrails. Cut through the midline, beginning at the top and continue cutting down to the head. Cut around the rectum on each side and pull it out between the pelvic bones.

Place the knife between the first and second fingers of the left hand, inserting the fingers where the opening has been made, and with the right hand force the knife down through the breastbone to the opening in the neck. The fingers will serve as a guide in making the cut and will protect the intestines from being cut. When the opening has been made, remove the fat which surrounds the stomach. Then remove the intestines, stomach, and gullet in one operation, thus preventing contamination of the carcass by the stomach contents. Remove the pluck, consisting of the heart, lungs, and wind-pipe, by cutting the diaphragm, which is the membrane that sepa-



FIG. 4.—Removing the Intestines.

rates the organs of the chest from the stomach, bowels, and other abdominal organs. By cutting between the light and dark portions of the diaphragm and continuing down along the backbone the entire pluck may be easily removed. Put a piece of corncob or small block of wood in the hog's mouth so that air can circulate. Wash out the inside of the carcass with cold water and a cloth. Take a stick about 12 or 18 inches long and spread open the sides, allowing a free circulation of air. To facilitate cooling, the head should be removed and the carcass split or sawed down the backbone. In splitting or sawing the carcass be careful to cut as near the midline as possible.

THE LEAF LARD.

While the carcass is still warm remove the leaf lard or kidney fat in order to facilitate cooling the carcass and lessen the danger of the hams and loins souring. The leaf lard should be spread out on a table to cool, with the thin membrane side turned down. The gut fat should not be mixed with the leaf lard in rendering.

COOLING THE CARCASS.

The carcass should be cooled after slaughtering, but not allowed to freeze. Temperature can not be controlled on the farm, but it is possible to kill when the weather is favorable. Select a day in winter when there is chance for cooling the carcass before the surface freezes. The desirable temperature for cooling meat is from 34 to 40° F. In the summer it is necessary to have refrigeration. In the fall it is best to kill in the evening, allowing the carcass to cool overnight. Hang the carcass in a dark cellar or a cool room in the barn before the flies can get at it. Freshly killed meat absorbs odors very readily; do not hang the carcass in a freshly painted room or in a room with tar, kerosene, or gasoline.

A pork carcass should not be cut up until it is thoroughly cooled.

CUTTING UP HOGS.

The usual farm method of cutting up a hog is to sever the ribs on each side of the backbone, take out the backbone, and split the carcass down the midline. The ribs are taken out before the sides are "blocked." Another method is to split with a saw or cleaver as near the midline as possible. Then divide each half into four parts, head, shoulder, middle, and hams, as shown in figure 5, left side. Remove the leaf if it was not done before. Peel the leaf backward with the fingers, starting at the front end. The kidneys are in this fat.

HEAD.

The head is generally removed before the carcass is split into halves. Cut about an inch back of the ears, making a complete circle around the head. If the cut does not happen to strike the atlas joint, twist the head and it will yield. The fattest part of the head can be used for lard and the more fleshy parts may be used for sausage or headcheese. The jowl is sometimes used for cooking with sauerkraut or baked beans and in the spring with turnip greens.

SHOULDER.

One-half the carcass should be placed on a cutting table and cut up into various cuts shown in figure 5. Cut off the front foot about 1 inch above the knee and the hind foot the same distance above the hock. The feet can be used to make pickled pigs' feet or

pigs'-foot jelly. The shoulder cut is made between the fourth and fifth ribs. Remove the ribs from the shoulder; also the piece of backbone which may be attached. Cut close to the ribs in removing them so as to leave as much meat on the shoulder as possible.

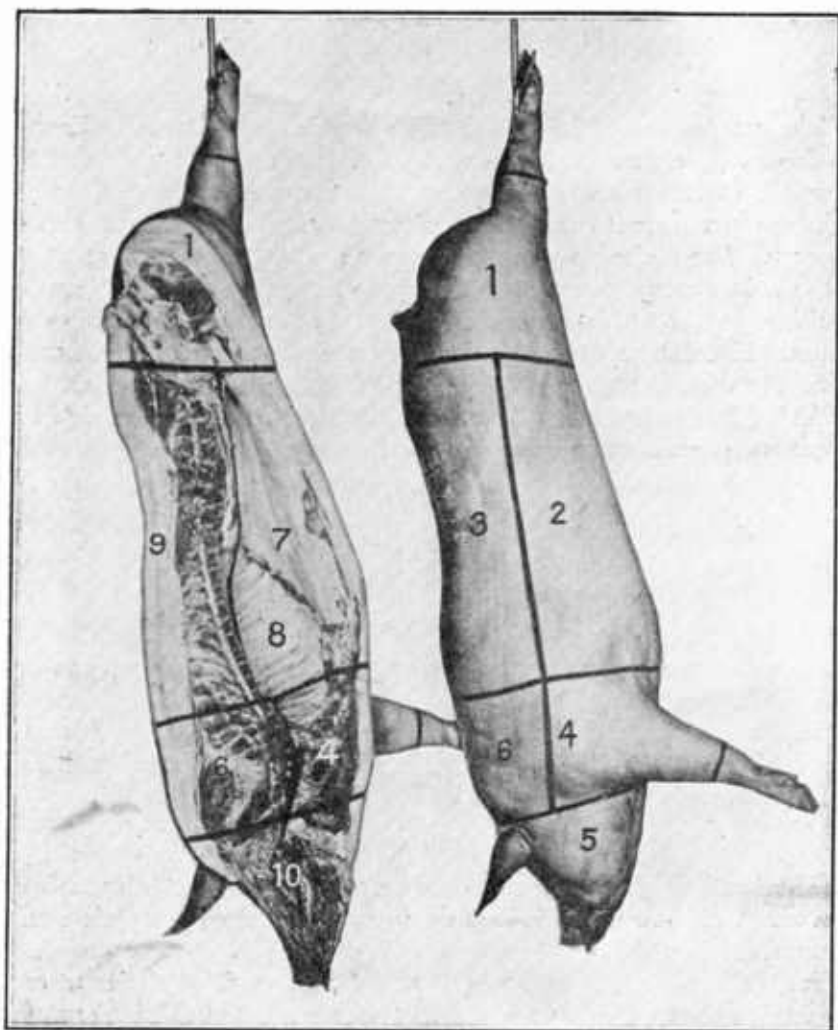


FIG. 5.—Cuts of pork: 1. Ham. 2. Bacon. 3. Loin. 4. Shoulder. 5. Head. 6. Plate. 7. Leaf Lard. 8. Ribs. 9. Fatback.

These are "spare ribs" and make an excellent dish when fried or baked. If only a small quantity of cured meat is desired, the top of the shoulder may be cut off about one third the distance from the top and parallel to it (fig. 6). The fat of the shoulder top may be used for lard and the lean meat for steak or roasts. It should be

trimmed up smoothly. The fat trimmings should be used for lard and the lean trimmings for sausage.

MIDDLE.

The ham is removed from the middle by cutting just back of the rise in the backbone. Cut from the flank toward the root of the



FIG. 6.—The shoulder cuts and trimmings.

tail at an angle of about 45° . Loin meat which would otherwise be trimmed off the ham and used for sausage is thus saved. Remove the ribs from the side, cutting as close to the ribs as possible. The loin and fatback are cut off in one piece; cut parallel with the back

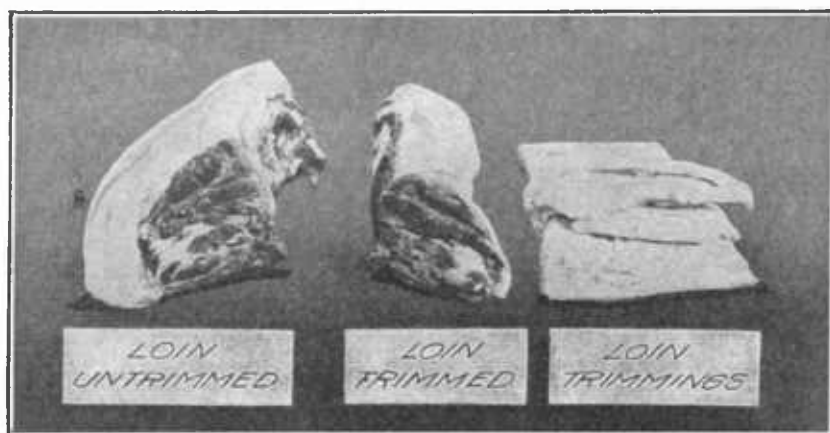


FIG. 7.—Loin, loin trimmings, and fatback.

just below the tenderloin muscle on the rear part of the middle. Remove the fat on top of the loin, but do not cut into the loin meat (fig. 7). The lean meat is used for chops or roasts and the fatback for lard. The remainder of the middle should then be trimmed for bacon. If it is a very large side it may be cut in two pieces. Trim all sides and edges as square as possible (fig. 9).

HAM.

All rough and hanging pieces of meat should be trimmed from the ham. It should then be trimmed smoothly, exposing as little lean

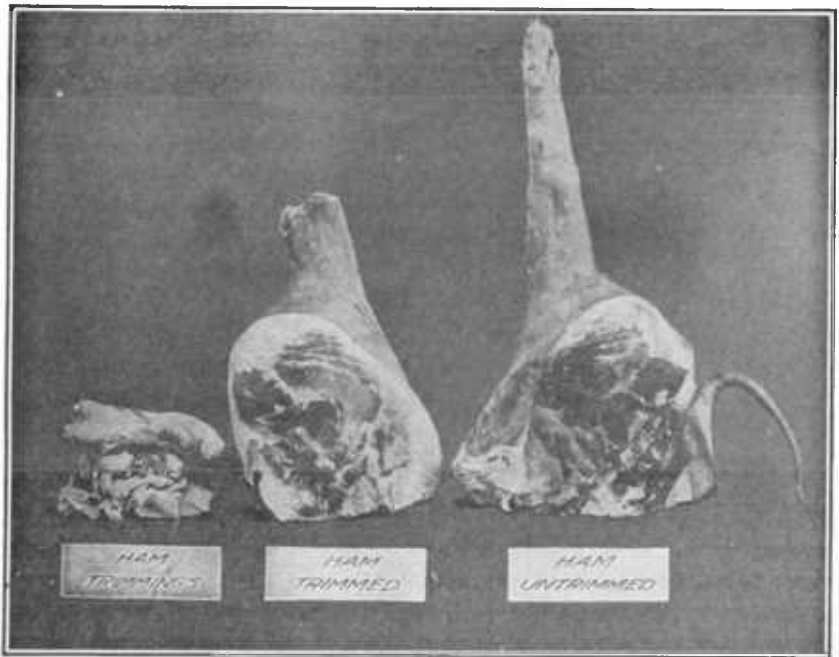


FIG. 8.—Ham and ham trimmings.

meat as possible, because the curing hardens it (fig. 8). All lean trimmings should be saved for sausage and fat trimmings for lard.

The other half of the carcass should be cut up in similar fashion.

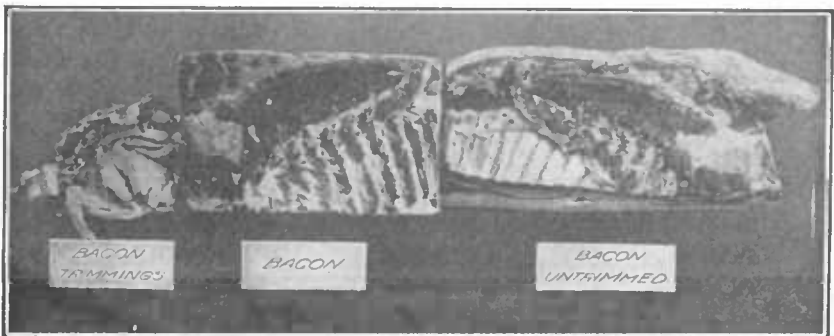


FIG. 9.—A side of bacon and bacon trimmings.

MEAT TRIMMINGS AND FAT TRIMMINGS.

After the carcass has been cut up and the pieces are trimmed and shaped properly for the curing process there are considerable pieces of lean meat, fat meat, and fat which can be used for making saus-

age and lard. The fat should be separated from the lean and used for lard. The meat should be cut into convenient pieces to pass through the grinder.

RENDERING LARD.

The leaf lard is of the best quality. The back strip of the side also makes good lard, as do the trimmings of the ham, shoulder, and neck. Intestinal or gut fat is an inferior grade and is best rendered by itself. It should be thoroughly washed and left in cold water for several hours before rendering, which will partially eliminate the offensive odor. Leaf lard, back strips, and lard trimmings can be rendered together. If the gut fat is included the lard takes on a very offensive odor.

First, remove all skin and lean meat from the lard trimmings. To do this cut the lard into strips about $1\frac{1}{2}$ inches wide, then place the strip on the table, skin down, and cut the fat from the skin. When a piece of skin large enough to grasp is freed from the fat, take it in the left hand, knife held in the right hand inserted between the fat and skin, pull the skin and with the knife slanted downward slightly this will cleanly remove the fat from the skin. The strips of fat should then be cut into pieces 1 or $1\frac{1}{2}$ inches square, making them about equal in size so that they will fry out evenly (fig. 10).



FIG. 10.—Pieces of fat cut for rendering.

Pour into the kettle about a quart of water, then fill it nearly full with the lard cuttings. The fat will then heat and bring out the grease without burning. Cook the lard over a moderate fire. At the beginning the temperature should be about 160° F., and it should be increased to 240° F. When the cracklings begin to brown, reduce the temperature to 200° F. or a little over, but not to exceed 212° F., in order to prevent scorching. Frequent stirring is necessary to prevent burning (fig. 11). When the cracklings are thoroughly browned, and light enough to float, the lard should be removed from the fire. Press the fat from the cracklings and use them to make crackling bread or feed them to the chickens. When the lard is removed from the fire allow it to cool a little. To aid cooling stir it, which also tends to whiten it and make it smooth. Then strain it through a muslin cloth into the containers.

Lard which is to be kept for a considerable time should be placed in air-tight containers and stored in the cellar or other convenient place away from the light, in order to avoid rancidity. Fruit jars are probably available at seasons when lard is being rendered for summer use and they make excellent containers. Earthenware containers, such as crocks and jars, may also be used and should be sealed with a coating of paraffin. All containers should be sterilized before filling, and if covers are placed on the crocks or jars, they also should be sterilized before use. Lard stored in air-tight containers away from the light has been found to keep in perfect condition for a number of years.

When removing lard from a container for use, take it off evenly from the surface exposed. Do not dig down into the lard and take out a scoopful, for that leaves a thin coating around the sides of the container, which will become rancid very quickly through the action of the air.

CURING PORK.

The first essential in curing is to make sure the pork is thoroughly cooled. Meat should never be frozen either prior to or during the period of curing.

The proper time to begin curing is when the meat is cooled and still fresh. Twenty-four to 36 hours after killing is the opportune time.

VESSELS FOR CURING.

A clean hardwood molasses or sirup barrel is a suitable vessel in which to cure pork. The barrel should be clean and tight so as to prevent leakage. A large stone or metal jar is the best container in which to cure meat but the initial cost is high. Stone or metal containers are very easily kept clean. If a barrel is used repeatedly for curing pork it is necessary to scald it out thoroughly before fresh pork is packed into it.

CURING AGENTS.

Salt, saltpeter, sugar, and molasses are the principal preservatives used in curing pork. Borax, boric acid, formalin, salicylic acid, and other chemicals are sometimes used, but their use is prohibited in connection with meats and products to which the Federal meat-inspection law is applicable.

Salt when applied alone to meat makes it very hard and dry because its action draws out the meat juices and hardens the muscle fibers. Saltpeter is used to preserve the natural color of the meat. It is more astringent than salt and should be used sparingly. Sugar and molasses act differently from salt. They soften the muscle fibers and improve the flavor of the meat; hence the combination of salt and sugar makes a good cure.

BRINE CURING AND DRY CURING.

Much diversity of opinion exists as to the merits of the two ways of curing—brining and dry curing. It is less trouble to pack meat in a barrel and pour brine on than to rub meat three or four times with salt. The brine keeps insects and vermin away. If directions are followed closely and pure water is used in making the brine, it will not spoil and should keep for a reasonable length of time. If



FIG. 11.—A suitable kettle for rendering lard.

the brine becomes "ropy," it should be poured off and boiled or a new brine made. It is advisable to rub the surface of the meat with fine salt and allow it to drain, flesh side down, for 6 to 12 hours before being put in the cure. This applies to both brine and dry curing.

PLACE FOR CURING.

A cool, well-ventilated cellar, free from rats, is the most desirable place for both brine and dry curing. The smokehouse may also be

used for the purpose, but it should be observed that when curing by the dry-salt method special attention should be given to the ventilation to prevent excessive dryness.

Cold-storage and ice plants generally have rooms equipped with partitioned shelves, where farmers may store their meat during the process of curing at an even temperature, which will insure excellent results. This should be beneficial in southern climates, where the weather is warm or subject to sudden change. In localities where such refrigeration facilities have not been established cooperative cold-storage plants conducted by a number of farmers in a community may be found to be a good investment, as plants of that kind may be used also for the purpose of manufacturing ice during the summer months and the power may be utilized further in generating electricity for lighting.

BRINE-CURED PORK.

Many different formulas may be used for curing pork by the brine method, but the recipe given below if followed closely will give very good results:

For each 100 pounds of meat use—

10 pounds salt.

2½ pounds sugar or sirup.

2 ounces saltpeter.

5 gallons water.

In warm weather 9 or 10 pounds of salt are preferable.

Allow four days' cure for each pound in a ham or shoulder and three days for bacon and small pieces. For example, a 15-pound ham will take 60 days; a piece of bacon weighing 10 pounds, 30 days.

The brine should be made the day before it is used, so that it will be cool. All the ingredients are poured into the water and boiled until thoroughly mixed. Place the ham on the bottom of the container, shoulders next, bacon sides and smaller cuts on top. Pour in the brine, and be sure it covers the meat thoroughly. In five days pour off the brine and change the meat, placing the top meat on the bottom and the bottom meat on top, then pour back the brine. Repeat this operation again on the tenth and eighteenth days. If the pickle becomes ropy, take out all the meat and wash it and the container off thoroughly. Boil the ropy pickle, or, better, make new pickle. When each piece of meat has received the proper cure, take it out of the pickle and wash in lukewarm water, string, and hang in the smokehouse. (See p. 25 for directions for smoking.) The temperature of the smokehouse should not exceed 125° F. Smoke the meat until it has a good chestnut color.

Below is an excellent cure, in which the meat is preserved in brine formed from the mixture of the juices brought out of the meat by the application of the following ingredients:

For each 100 pounds of meat use—

- 8½ pounds salt.
- 2 pounds melted sugar or warm sirup.
- 2 ounces saltpeter.
- 2 ounces red pepper.
- 2 ounces black pepper.

All the ingredients should be mixed thoroughly. Rub each piece of meat with the mixture. Pack the meat in a container, hams on the bottom, shoulders next, and bacon sides on top. Liquid enough will be formed to cover the hams. Allow the meat to cure for six weeks; string and hang in the smokehouse. (See p. 25 for directions for smoking.) The bacon and smaller pieces of meat may be eaten any time after they are cured. The hams are better after they have aged.

DRY-CURED PORK.

Dry-cured pork requires more work than brine-cured, though it is sometimes less expensive. Danger from rats and other vermin is less in the case of brine-cured pork. Both methods of curing are very successful if care is taken to see that each operation is executed correctly. Following is the method of dry curing:

For each 100 pounds of meat use—

- 7 pounds salt.
- 2½ pounds sugar.
- 2 ounces saltpeter.

Mix all ingredients thoroughly, then rub one-third of the quantity of the mixture over the meat and pack it away in a box or on a table. The third day break bulk and rub half of the remaining mixture on the meat and repack. Break bulk the seventh day and rub the remainder of the mixture over the meat and pack the meat to cure. Allow one day and a half cure for each pound the pieces of meat average. After the meat has cured, wash each piece with lukewarm water and hang in the smokehouse. (See p. 25 for directions for smoking.)

Another dry cure is as follows:

For each 100 pounds of meat use—

- 8 pounds salt.
- 3 pounds warm sirup.
- 2 ounces saltpeter.
- 3 ounces black pepper.
- 2 ounces red pepper.

All the ingredients above should be mixed thoroughly. Rub each piece of meat thoroughly with the mixture and pack the meat in bulk on a clean floor or table or in a container. In 10 days break bulk and repack the meat. This is done to make the cure more uniform and to prevent souring. Allow the meat to cure five or six weeks. (See page 25 for directions for smoking.)

PICKLED PORK.

Fatbacks cut into suitable pieces for curing are generally treated in the following manner: The pieces of meat are packed in a container and a pickle made of the following ingredients is poured over the meat: To 4 gallons of water add 10 pounds of salt and 2 ounces of saltpeter for each 100 pounds of meat.

THE SMITHFIELD HAM.

Smithfield hams are cured as follows:

The hams are placed in a large tray of Liverpool fine salt, then the flesh surface is sprinkled with finely ground crude saltpeter until the hams are as white as though covered by a moderate frost—or, say, use 4 to 6 ounces of the powdered saltpeter to each 100 pounds of green hams.

After applying the saltpeter, salt immediately with the Liverpool fine salt, covering the entire surface well. Then pack the hams in bulk, but not in piles more than 3 feet high. In ordinary weather the hams should remain thus for three days. Then break bulk and re-salt with the fine salt. The hams thus salted and resalted should now remain in salt in bulk one day for each pound each ham weighs—that is, a 10-pound ham should remain 10 days, and in like proportion of time for larger and smaller sizes. Next wash with tepid water until the hams are thoroughly cleaned, and, after partially drying, rub the entire surface with finely ground black pepper, after which they should be hung in the smokehouse and the important operation of smoking begun. The smoking should be done very gradually and slowly, lasting 30 or 40 days.

After the hams are cured and smoked they should be re-peppered, to guard against vermin, and then bagged. These hams improve with age and are in perfection when 1 year old.

SAUSAGE.

If made into sausage, scraps and pieces of meat which otherwise would be wasted may be converted into delicious dishes. Sausage making is a trade well worth learning. Often on the farm when animals are butchered for home consumption portions of the carcass are not utilized to best advantage. A demand for fresh and smoked country sausage always exists, and it is just as important for every farmer to know how to make good sausage as it is to know how to make good hams and bacon.

The only equipment necessary to make sausage is a meat cutter with a stuffer attachment. A very convenient grinder can be purchased for \$3, and a stuffer attachment will cost about 35 cents. A knife, cord string, and casings or muslin bags also will be needed. The muslin bags can be made any size, but the most convenient are 12 inches long by 2 inches in diameter. When sausage is stuffed in

muslin bags it should be paraffined after stuffing. Sausage stuffed in muslin bags and paraffined keeps longer and better than in casings. Sausage will keep very well in stone crocks or tin pans if a layer of lard or paraffin is put over the top.

PURE PORK SAUSAGE.

Good pork sausage may be made as follows: Take three parts of fresh lean meat to one part of fat. Add to each 100 pounds of meat $1\frac{1}{2}$ to 2 pounds salt, 2 ounces fine sage, 1 ounce ground nutmeg, and 4 ounces black pepper. Cut the meat into small pieces and then put through the grinder, using the small plate. The spices should all be mixed together and added to the meat as it goes through

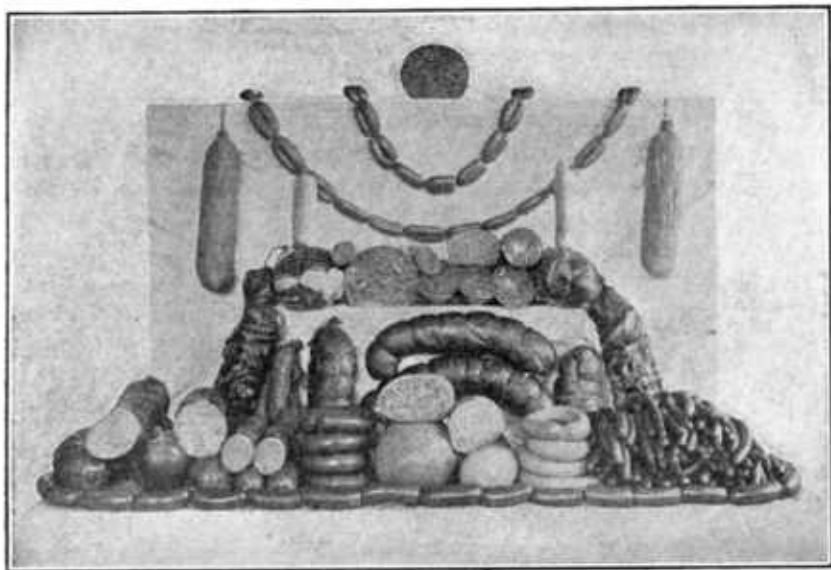


FIG. 12.—A display of various kinds of sausage.

the grinder. After it is well ground, mix thoroughly, to be sure that it is uniformly flavored. No water should be added if the sausage is to be stored away in bulk. If stuffed in casing a little water is necessary to soften the meat so that it will slip through the stuffer into the casings.

SMOKED OR COUNTRY SAUSAGE.

The following ingredients are used in making smoked or country sausage:

- 85 pounds lean pork.
- 15 pounds beef.
- $1\frac{1}{2}$ or 2 pounds salt.
- 4 ounces black pepper.
- 1 ounce red pepper.
- 1 ounce sweet marjoram.
- 1 ounce mace.

Cut the meat into small pieces and sprinkle seasoning over it, then run through the grinder with the small plate. Put it away in a cool place for 24 or 36 hours, then add a little water and stuff into hog casings and smoke in a very cool smoke until a dark mahogany color is obtained.

FRANKFURT OR VIENNA SAUSAGE.

Frankfurt or Vienna style sausage is more popular with the manufacturers and the trade than any other kind. It is made as follows:

- 70 pounds beef.
- 30 pounds pork (not too lean).
- 20 pounds water.
- 1½ or 2 pounds salt.
- 2 ounces nutmeg.
- ¼ ounce black pepper.
- 1 or 2 ounces red pepper.

Cut the beef into small pieces and salt and allow it to cure for 48 hours in a cool place. Cut the pork into small pieces and put the beef and pork through the grinder together. Put into a container and add the water and spices. After it is all mixed put it through the grinder again, using the fine plate. Stuff into sheep casings. After the sausage is stuffed into the casings by means of the thumb and forefinger, press the casing together, about 4 inches apart. Twist the first link two or three times. The next link made should be twisted in the opposite direction to keep the casing from untwisting. After it is twisted into links, hang it in the smokehouse for about 2 hours at a temperature not to exceed 125° F. After it is smoked, boil it for 5 or 10 minutes and then plunge it into cold water and hang it in a cool place.

BOLOGNA STYLE SAUSAGE.

Bologna style sausage is used extensively for lunches on picnics or outings. Its keeping qualities are excellent. The following ingredients are used in making it:

- 60 pounds cured beef.¹
- 40 pounds pork.
- 20 pounds water.
- 1½ or 2 pounds salt.
- 2 ounces mace.
- 1 ounce coriander.
- 4 ounces black pepper.

Grind the beef and let it cure for 24 or 36 hours in a cool place, then grind it very fine. Put the pork through the grinder, using the medium plate only once. Then put the beef and pork together in a

¹ Beef, ground, salt and seasoning added, and the bulk stored away for from 36 to 48 hours before using it for sausage. Fresh meat stuffed into casings and smoked invariably spoils.

container and add the spices and water. Mix thoroughly until it takes on a dull color and becomes sticky. Stuff in weasands, large beef casings, or in beef rounds. Allow it to hang about 20 minutes in a cool place. This sausage can also be stuffed into muslin bags and paraffined. It will keep perfectly prepared in this way. Smoke for about 2 hours, or until a good color is obtained, at a temperature not to exceed 140° F. After the bologna is smoked it should be boiled, the weasands and rounds about 30 minutes and the larger bolognas about 1½ hours, at a temperature of 160° F. To tell when bologna is cooked enough, squeeze it in the hand, and if done it will squeak when the pressure is released. Place in cold water for about 30 minutes and then hang it up in a cool place to keep.

BLOOD SAUSAGE.

Blood sausage is made of the following ingredients:

25 pounds cured back or shoulder fat.

7 pounds cured fat skins.

6 pounds blood.

½ pound onions.

1 pound salt.

½ ounce white pepper.

1 ounce sweet marjoram.

¼ ounce cloves.

Cook the fat for about 1 hour and the skins 2 hours at a temperature of 200° F. When cooked put through grinder, using small or medium plate. Put into a container, add blood and seasoning, and mix thoroughly. Stuff into large beef casings and boil, in the same water that the meat was cooked in, until the sausage floats. Then dip the sausages into cold water and hang away to cool.

HEADCHEESE.

The head is generally used for making headcheese, but odds and ends also can be used. The head should be shaved clean, the snout skinned and nostrils cut off just in front of the eyes. Cut out the eyes and eardrums. The fattest part of the head is generally used for lard. When the head is cleaned, soak it in water for some time to extract the blood and dirt. After the head is thoroughly cleaned cover it with water and boil until the meat separates from the bones. Tongues and hearts may be cooked with the head. When thoroughly cooked take out the meat, saving the liquor for future use. Chop the meat up fine. Season with 1½ pounds salt, 3 ounces black pepper, 1 ounce red pepper, and 4 ounces ground cloves, together with 2 gallons of the liquor, for every 50 pounds of meat. All should be mixed thoroughly so that proper seasoning is obtained. If casings are available, stuff the mixture into large beef casings. A hog stomach, after it is thoroughly cleaned, can be used. If the meat is stuffed

into casings it should be boiled again in the same liquor in which the meat was boiled. The meat in the casings should be boiled until it floats on the top, then placed in cold water for a short time. Store it away in a clean, cool place on a shelf or table. Place a board over the meat in the casings with a weight on top in order to hold the shape and to prevent the moisture from collecting in one spot. If there are no casings available in which to stuff the meat it should be kept in shallow pans.

LIVER SAUSAGE OR PUDDING.

All the odds and ends resulting from cutting up the hog carcass can be used in making liver sausage. The head, if used, should be cleaned as previously described under "Headcheese." The jowl may be cut off and salted down. The head, liver cut into slices and some beef or veal, if any is at hand, should be put into a kettle and boiled. The skin cut from the fat also can be boiled with this meat. The skin will be cooked before the meat, so that it should be put into a cloth sack and removed when thoroughly cooked. Livers also cook in a very short time and should be removed. The meat should cook until it falls from the bones. All the meat should be ground, using the smaller grinder plate. Add $1\frac{1}{2}$ pounds salt, 3 ounces sweet marjoram, 1 ounce allspice, 1 ounce black pepper, and about 1 gallon soup (the broth the meat was cooked in). Garlic or onions can be added if desired. This recipe is for every 40 pounds of meat. The seasoning should be worked into the meat. This finished product can be put into jars covered with paraffin or stuffed into beef rounds. When stuffed into casings it should be cooked until the sausage floats in the same water in which the meat was cooked. Then place in cold water until the sausage is thoroughly cooled.

SUMMER SAUSAGE.

The following ingredients are used to make summer sausage:

- 25 pounds cured beef free from sinews.
- 15 pounds pork trimmings.
- 6 ounces white pepper.
- 1 ounce whole black pepper.
- 1 ounce whole mustard seed.

This sausage can be made in cold weather only. All the meat is put through the grinder and spices added. No salt is needed, the cured beef being salty enough. Mix it all thoroughly until it is evenly seasoned. Spread it out in a cool place and leave it for from 36 to 40 hours, then stuff it into hog bung casings and let hang overnight. Smoke over very cool smoke for several days. This sausage can be kept in a dry place the year round. If it gets moldy, simply wipe the mold off.

SCRAPPLE.

The heads and feet of hogs are generally used in making scrapple, but it can be made from any other hog meat. The heads should be split through the middle and placed in a kettle with water enough to cover them. They should be cooked until the meat falls from the bones. Drain the broth off. Pick all the bones out of the meat, then chop the meat fine and add it to the broth and boil. Corn meal should be added slowly until it is as thick as mush. Add the corn meal slowly and stir vigorously, so as to avoid lumpiness. Stir the mixture well for 10 or 15 minutes and allow it to boil one hour, when it

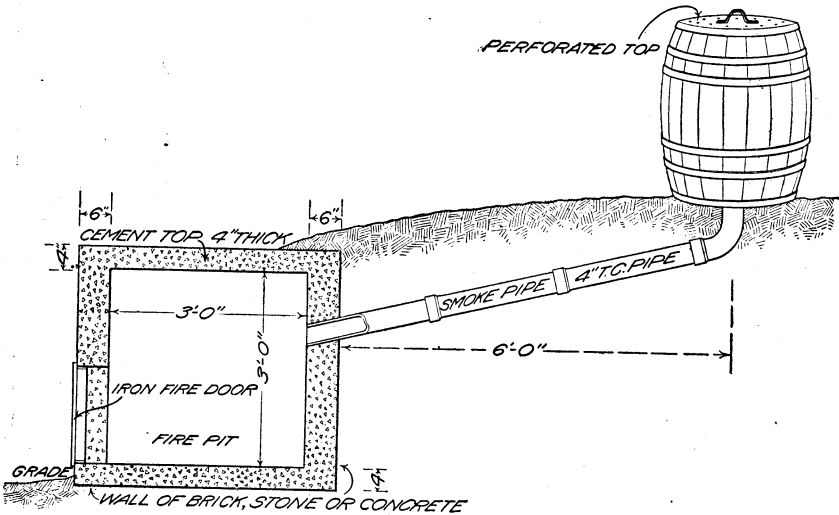


FIG. 13.—A type of smokehouse that can be constructed quickly and cheaply.

should be thick like mush. Pour the scrapple into shallow pans or molds. When cold, it can be sliced and fried.

SMOKING CURED MEAT.

The process of smoking helps to preserve the meat. Smoking also gives a desirable flavor to the meat if it is smoked properly and with the right kind of fuel.

THE SMOKEHOUSE.

The smokehouse can be made any size and of the kind of material suitable to the demands of the owner. If a very small quantity of meat is to be smoked once a year, a barrel or a box (fig. 13) will answer. On the other hand, if a considerable quantity of meat is smoked and the house is to be permanent, it should be built of brick, concrete, or stone to be fireproof (figs. 14, 15). A small outdwelling can be used if care is taken to confine the fire to the center of the room in an iron kettle. The safest method is to construct a fire pit

outside the house and pipe the smoke into the house. The pipe running from the pit to the house should be buried to prevent crushing.

A smokehouse 6 by 8 feet, 10 feet high, will give best results for general farm use. Ventilation should be provided to carry off the warm air and prevent overheating the meat. Small openings under the eaves or a chimney in the roof will control ventilation. If arrangements can not be made to have a fire pit outside the house,



FIG. 14.—A farm smokehouse, fireproof and fairly tight.

it should be built on the floor and a metal sheet constructed to shield the meat. If the meat can be hung 6 or 7 feet above the fire, the shield will not be necessary. At that height the meat will get the benefit of the thick smoke and still hang below the ventilator.

THE FUEL.

Green hickory or maple wood is the best fuel for smoking. Hard wood is preferable to soft wood. Resinous woods should never be used, as they give an objectionable flavor to the meat. Corncocks may be used, but they deposit carbon on the meat, giving it a dirty appearance.

SMOKING.

Meat should be removed from the brine when it is cured and not allowed to remain in the brine overtime. When the meat is removed from the brine it should be soaked for about half an hour in water. If meat has remained in the brine longer than the allotted time, soak each piece half an hour and 3 minutes extra for each day overtime. The meat should then be washed in lukewarm water, strung, and



FIG. 15.—Meat-curing and smoking house. (Built in Georgia after plans by United States Department of Agriculture.)

hung in the smokehouse. Do not hang the meat so that the pieces touch. (Fig. 16.) The space between the meat is necessary to insure good circulation of smoke around the meat. Permit the meat to hang in the smokehouse for 24 hours before beginning to smoke. A slow fire should be started, so that the meat will warm up gradually. Do not get the house too hot. The fire can be kept going continuously until the smoking is complete, holding the temperature as even as

possible (120° F.). From 36 to 48 hours is the time required to smoke a lot of meat, but if the meat is intended to be kept for any length of time slower and longer smoking is desirable. During warm weather it is better to start the fire every other day rather than heat the meat too much. In the winter, however, if the fire is not kept going, the meat may cool and the smoke will not penetrate properly. As soon as the meat is thoroughly smoked, open the doors and ventilator, to cool the meat. When the meat is smoked it can hang in the smokehouse, but for absolute safe-keeping it should be wrapped or packed away.



FIG. 16.—Meat hanging in the smokehouse.

PRESERVING SMOKED MEATS.

Smoked meat after it is hard and firm should be wrapped in heavy paper and put into muslin sacks. It is very important that the top of the sack be tied properly so as to keep insects out. Before the hams or bacons are placed in the sacks, cut the strings. There is a great tendency to use the same string to hang up the meat after it is sacked. It is impossible to tie the top of the sack and make it insect proof if a string sticks out of the top. In tying the top of the sack make a double wrap before tying a knot, which will prevent the entrance of any insects. Each sack should be painted with

yellow wash and then each piece can be hung up for future use. Never stack the hams and bacons in a pile after yellow wash has been applied.

RECIPE FOR YELLOW WASH.

For 100 pounds hams or bacon use—

3 pounds barium sulphate.

0.06 pound glue.

0.08 pound chrome yellow.

0.40 pound flour.

Half fill a pail with water and mix in the flour, dissolving all lumps thoroughly. Dissolve the chrome yellow in a quart of water in a separate vessel and add the solution and the glue to the flour; bring the whole to a boil and add the barium sulphate slowly, stirring constantly. Make the wash the day before it is required. Stir it frequently when using, and apply with a brush.

SHIPPER'S CERTIFICATE.

Farmers who ship their cured meats must comply with official State and Federal regulations. Below appears a sample shipper's certificate such as must be used in interstate shipments of uninspected meat or meat food products which are from animals slaughtered by the farmer on the farm. In providing blank certificates for the purpose this sample should be followed. In size it should be 5½ by 8 inches.

SHIPPER'S CERTIFICATE.

Date _____, 191__

Name of carrier _____

Shipper _____

Point of shipment _____

Consignee _____

Destination _____

I hereby certify that the following-described uninspected meat or meat food products are from animals slaughtered by a farmer on the farm, and are offered for transportation in interstate or foreign commerce as exempted from inspection according to the act of Congress of June 30, 1906, and at this date they are sound, healthful, wholesome, and fit for human food, and contain no

[illegible]

(Signature of shipper.)

(Address of shipper.)

ECONOMIC SUGGESTIONS.

Save all pieces of meat for sausage. There are many ways of converting it into a palatable product.

Bones should be crushed or ground for chicken feed.

Never put meat in cure before the animal heat is out of it.

Always pack meat skin side down when in the curing process, except the top layer in a brine cure, which should be turned flesh side down.

Keep close watch on the brine, and if it becomes "ropy," change it.

Do not forget to turn or change meat several times during the curing process.

The fat of dry-cured meat sometimes becomes yellow, but that does not make it unwholesome.

It takes more time to smoke dry-cured than brine-cured pork.

Slow smoking is much better than a rapid smoking, and there is less chance of causing the meat to drip.

If meat becomes moldy, brush off the mold with a stiff brush or trim the moldy parts off with a knife. The entire piece is not spoiled. Be sure that meat is thoroughly cooled before sacking.

Remember, the seasoning of sausage is generally governed by taste.

Fresh sausage can be kept under a covering of lard for a number of days.

KEEPING FRESH MEAT.

Fresh meat is difficult to keep during the summer months without the use of ice. Even with ice very little can be handled at one time on the average farm. If a room or family refrigerator can be kept at a temperature of 40° F. or less, with a good circulation of air, fresh meat can be kept for a week or 10 days. The air should be dry, because moisture in a refrigerator tends to develop wet mold or slime, which will spoil the entire piece of meat. If there is an ice house on the farm a small portion of it may be partitioned off as a cold-storage room. The ice can then be properly packed on three sides of it, and with good drainage this makes a very satisfactory place for keeping meat. This space may also be used for storing butter, poultry, or other perishable products.

A SMALL ICE HOUSE.

To keep perishable products for a considerable time, some farmers may find it convenient and necessary to build a small ice house, which is not unduly expensive and has the advantages of saving perishable products that otherwise would spoil. The following description, plans, and bill of necessary materials¹ will assist in the construction of a small ice house.

METHOD OF BUILDING THE HOUSE.

Cut four pieces of rough 2 by 6 inch scantling 4 feet 10½ inches long and spike them together in pairs to make the girders. (See A, figs. 18, 19, 20, 21, 22.) Cut four pieces of rough 2 by 6 inch scantling 6 feet 5 inches long and set them on edge, spaced as shown in figure 19, on the girders which are to be placed at the extreme ends of the joist. The frame should now be turned over and the first layer of floor boards (marked C, figs. 18, 19, and 21) nailed to the joists. The floor boards should be cut so that they will just come to the outside edge of the joists (see C, figs. 19 and 21).

Over the flooring put on a layer of building paper. Cut the paper long enough to be turned up at least 4 inches on the outside face of the joists. The next layer of boards is now put on over the paper. The boards should be cut long enough to extend the thickness of the board beyond the outside face of the joists (see D, figs. 18, 19, and 21).

¹Prepared by G. H. Parks, Meat Inspection Division of the Bureau of Animal Industry.

In figuring the drawings, it is assumed that the 2 by 4's are dressed four sides, that they will measure $1\frac{3}{4}$ by $3\frac{3}{4}$ inches, and that the flooring is three-fourths inch thick.

The platform is now ready to be turned over and the ends of the girders nailed on posts which are buried in the ground about 2 feet and extend above the ground about 10 inches, so that a bucket can

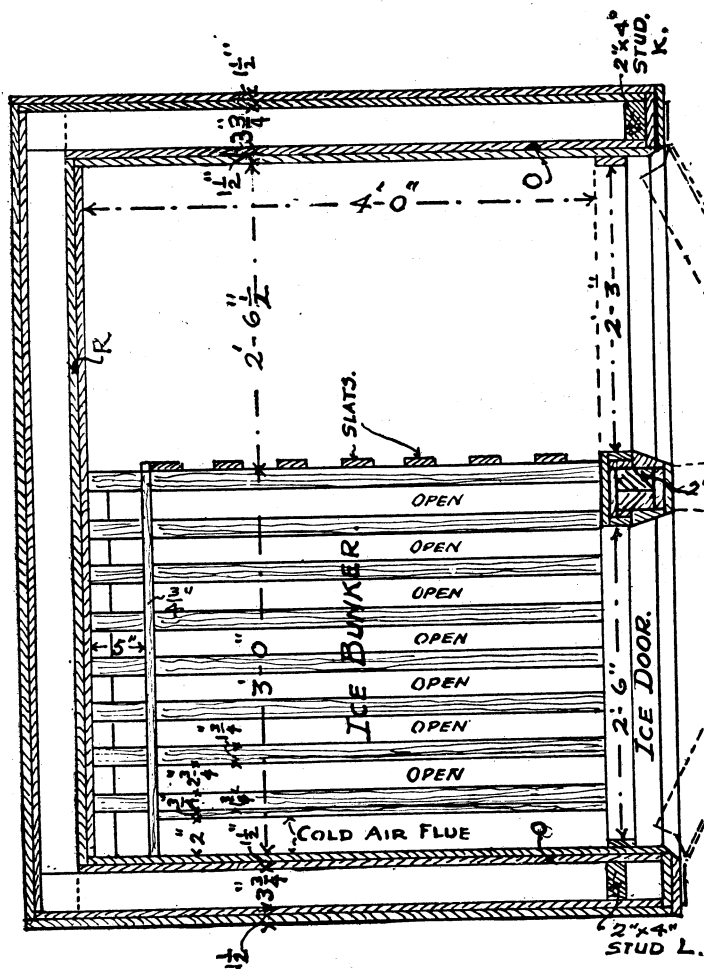


FIG. 17.—Plan for a small ice house. (Further details shown in succeeding figures.)

be placed under the drain pipe to catch the water from the melting ice and to form a trap (figs. 18 and 22).

Cut two pieces of boards 8 inches wide and 4 feet $10\frac{1}{2}$ inches long and nail across the ends of the joist, placing the top edge of the board flush with the tops of the joists (see D, figs. 18 and 19). Fill the spaces formed by the joists and the end boards with dry mill shavings, using about 100 pounds.

A layer of matched and dressed boards (marked E, figs. 18, 19, 21, and 22) should now be nailed on the joists. The floor should begin and end flush with the ends of the joists and not extend over the boards nailed to the ends of the joists (see E, figs. 18 and 21). On the long side of the platform nail a 2 by 4 laid flatwise the full length of the platform (see F, figs. 19 and 22). Across one end nail flatwise a 2 by 4 cut 4 feet 3 inches long and on the other end nail a

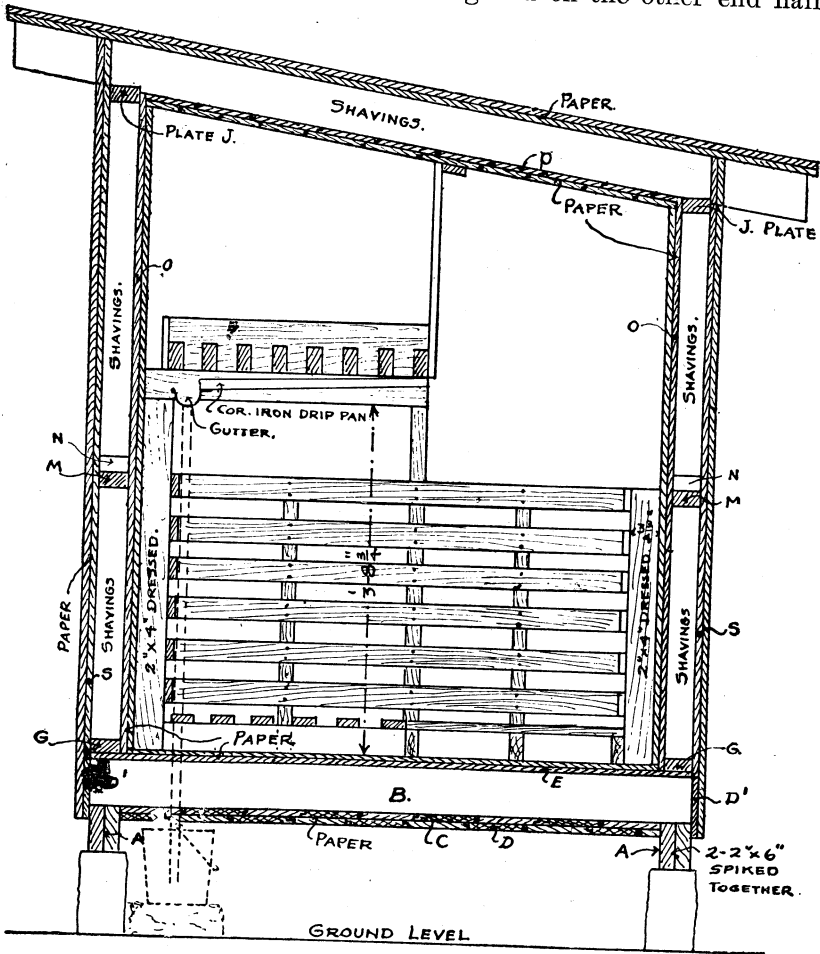


FIG. 18.—Longitudinal section of ice house.

2 by 4 cut 4 feet 6 $\frac{3}{4}$ inches long, both 2 by 4's to start from the ends of the 2 by 4 marked F in figures 19 and 22. (See G, figs. 18 and 21.)

Erect a 2 by 4 stud at the end of each 2 by 4 marked G, setting the studs so that the width of the stud will be parallel with the long side of the platform. The face of stud K will be flush with the outside edge of the platform, and the outside edge of stud L will be 3 $\frac{3}{4}$ inches back from the same face. (See figs. 17, 21, and 22.)

Cut two pieces of 2 by 4 inch 4 feet 10½ inches long for plates (plates marked J, figs. 18, 21, and 22). Cut the corner stud marked K, in figures 17 and 21, 5 feet 11 inches long and the stud marked L, in figures 17 and 21, 6 feet 11 inches long.

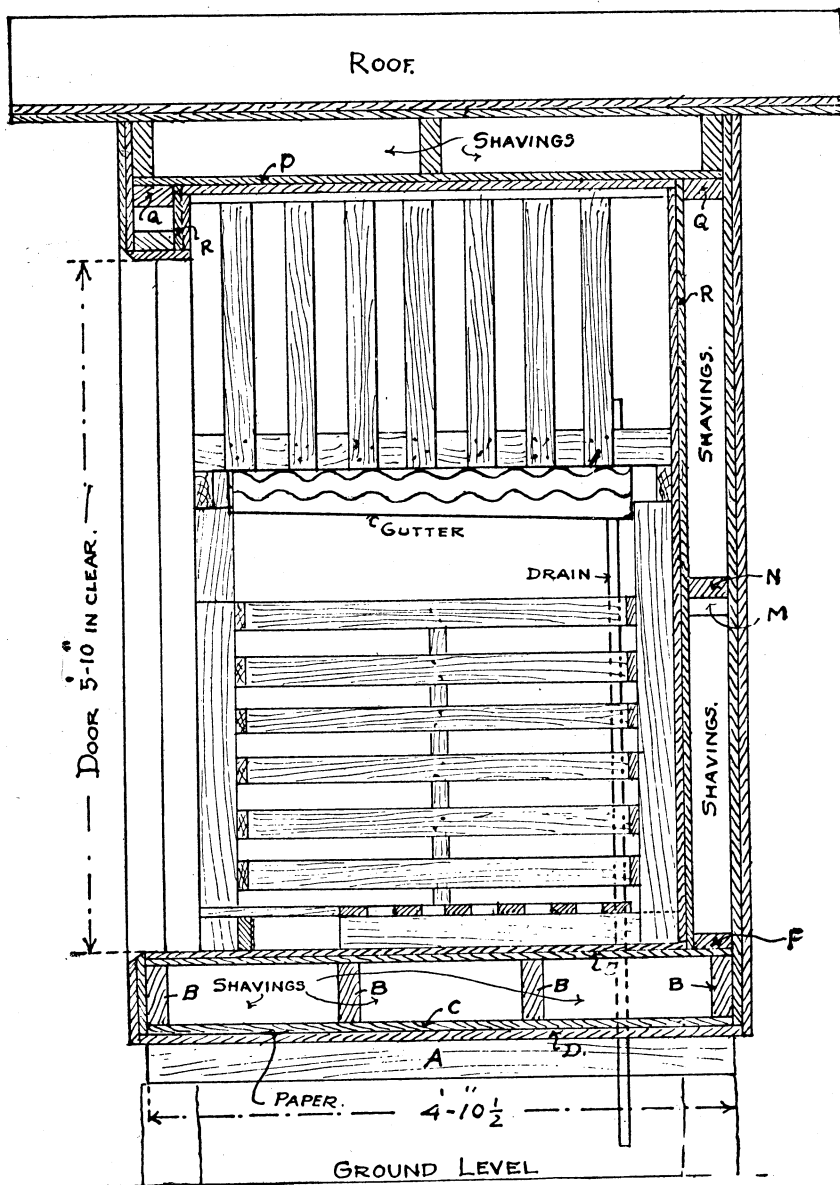


FIG. 19.—Cross section of ice house.

Now cut a 2 by 4 inch 3 feet 7½ inches long (marked H, fig. 21) and nail it along the outside edge, beginning at the outside corner of the platform. At the inside end and resting on the piece erect a

2 by 4 (marked I, figs. 17 and 21) cut to the correct height to fit under the first layer of ceiling. Cut three rafters each 8 feet 7 inches long.

Nail one of the plates on top of the corner stud K, level it, and support it at the other end by a board placed upright, nail to the platform on the end and at the corner. Place the plate on the stud

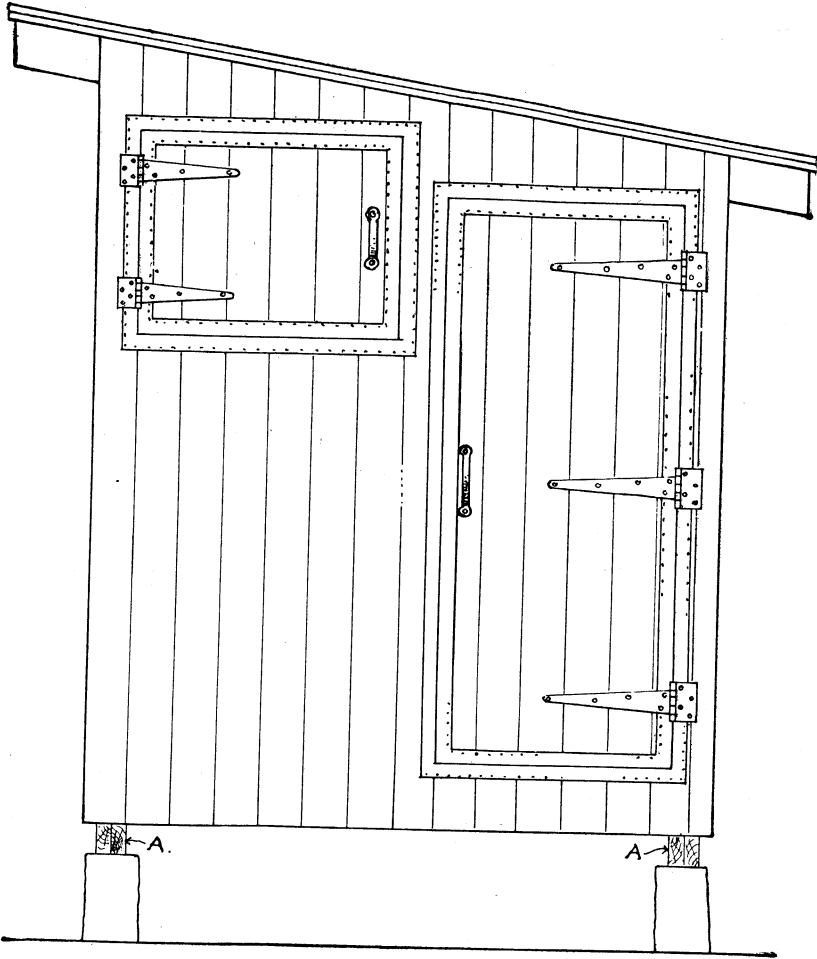


FIG. 20.—Front elevation of ice house.

L, letting it project over the stud $3\frac{3}{4}$ inches, and support the opposite end by a board erected in the same way as that used to hold up the first plate.

At each end of the building, 3 feet 6 inches from the floor, put in a piece of 2 by 4 (marked M in figs. 18 and 22) set flatwise, and nail to the upright 2 by 4 and to the upright board. Next cut a piece of 2 by 4, 6 feet 5 inches long (marked N in figs. 18, 19,

2 by 4's already in place and is for the purpose of forming a support to which the upper ends of the side boards are nailed. After this scantling is nailed in place put on the first inside layer of boards (marked R in figs. 17 and 19). Next put on the first layer of boards forming the outside. The boards for ends of building should be cut to extend from the top of the rafters to the top of the board nailed

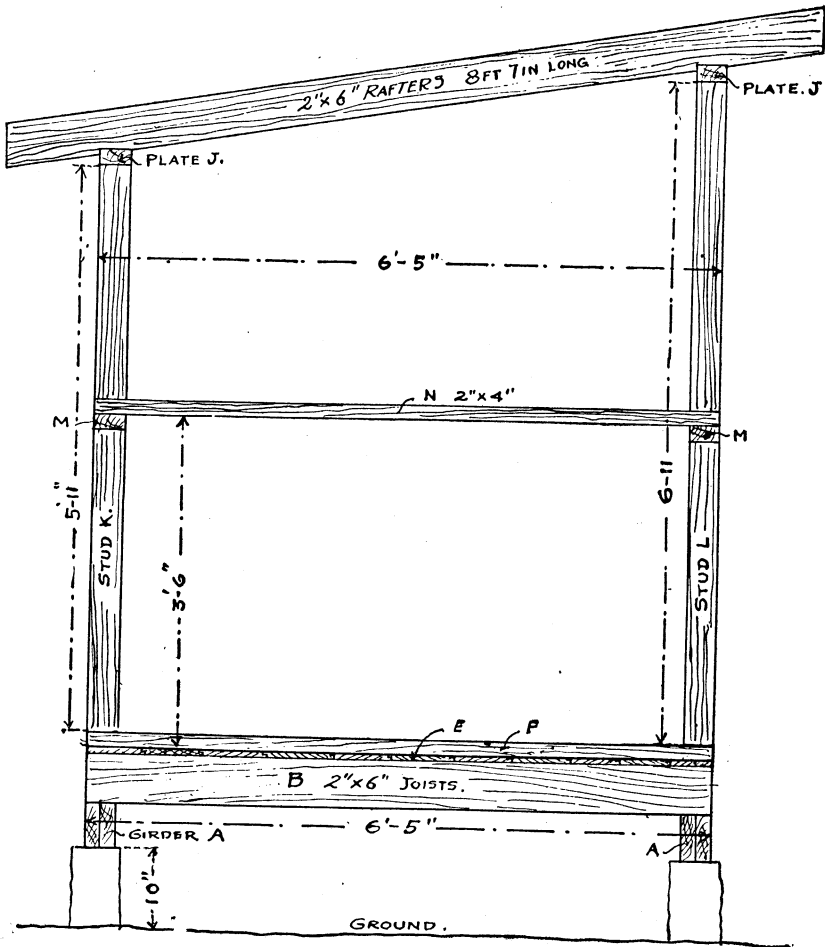


FIG. 22.—Elevation of frame of ice house.

across the ends of the floor joists (see S, fig. 18). The boards for the side should be cut flush with the top of the rafter and should follow the slope of the roof. The roof is now ready to have the shavings put in place. Use about 100 pounds and then put on the roof boards in two layers with paper between. The roof boards should project over the ends of the rafter about 2 inches and beyond the sides of the

building about 1 foot. The roof boards should be covered without delay with whatever kind of covering it is intended to use, as the shavings must not be allowed to get wet or damp.

The roof may be covered with tin, shingles, or one of the prepared roofings, and should be made thoroughly water-tight. When putting up the first layer of the boards on the outside of the frame the corner boards can not be put on until the shavings have been packed in the walls. The walls will require about 400 pounds of shavings.

Before the shavings are put in the walls the side of the building containing the doors should be framed as shown in figure 21, then the first layers of boards put on the inside and outside of the wall.

After the shavings are in place put on the corner boards and cover all the walls with a waterproof building paper, lapping the paper at the corners and at the horizontal courses.

The building is now ready to receive the outside layer of boards, which should be put on without delay to prevent as far as possible any moisture from getting into the insulation.

The doorways are beveled to receive the doors and to assist in making them fit tightly (see drawing, figs. 17 and 18). After the outside boarding is on, the inside of the room can be papered and sheathed. The paper is put on as follows: Cover the floor with two layers of waterproof paper and turn up on the walls 1 foot all around; then, starting at the floor, lay a course of paper on the walls parallel with the floor. Cut the strip 2 feet longer than the length of the wall and start the paper 1 foot from the corner, then carry around the nearest corner, tack to the wall, and carry around the next corner, doubling the paper at the corners. Put on the next course and lap over the lower course about 4 inches. Put on the remaining courses until the ceiling is reached, when the paper should be turned over and nailed to the ceiling so that the paper covers the corner between the ceiling and the wall. Now lay the ceiling and bring down on the walls about 1 foot. Use care in putting on the paper so that no holes will be punched in it. After the paper is on lay the top floor and ceiling before putting on the side and end walls, using care to make as tight a fit as possible between the floor and walls and the ceiling and walls.

After the walls are finished build the ice crib. The floor of the ice crib is made of 2 by 4 dressed long-leaf yellow pine, spaced 2½ inches apart. The supports for the floor are made by nailing a piece of dressed 2 by 4 inch scantling parallel with the floor to the inside boarding of the house and under each end of the scantling is nailed a 2 by 4 extending from the floor of the house to the underside of the supports. Running across the box nail a piece of 1 by 3 inch flatwise on the ceiling. The strip is so placed that it will be

outside of the ice crib and to it are nailed 1 by 3 inch dressed slats spaced about 3 inches apart. The bottoms of the slats are nailed to the outside of the first joist of the ice crib. This joist is located 3 feet from the back of the ice crib.

The joist nearest the back of the ice crib is spaced $2\frac{3}{4}$ inches from the back wall. On the face of this joist between the joist and the wall, nail a strip 1 by 4 inch dressed, letting the strip project 2 inches above the top of the joists. Five inches from the inside end of the ice crib nail a 1 by 4 inch dressed strip across all the joists to form a stop for the ice cakes.

The drip pan under the ice crib is made of a sheet of galvanized corrugated iron. The corrugations run the long way of the room. The sheet is made 2 feet 7 inches wide and 3 feet 4 inches long, the width being the length of the corrugations. A 3-inch galvanized-iron gutter 3 feet 4 inches long is riveted to the edge of the sheet on the underside. The sheet should pitch about 2 inches in the width. The high end of the sheet is nailed to the bottom of the first joist and the low end is supported by three straps soldered to the gutter and nailed to the joist above. The gutter should be closed at each end and should pitch about an inch from the front to the back. At the lowest point of the gutter the drainpipe should be attached by soldering. The drainpipe is a piece of gas or water pipe $\frac{3}{4}$ -inch inside diameter and should extend from the gutter through the floor of the house and project below about 12 inches. If a bucket is so placed under the pipe that the bottom of the pipe will be about an inch from the bottom of the bucket, the water from the melting ice will form a water seal that will prevent the outside air from entering the house. At least 2 inches of water should be kept in the bucket to form the seal.

If a drain is provided to carry away the water, the bucket can be omitted, provided a trap is made in the pipe.

The meat should not be stacked on the floor of the building, but racks should be provided. The racks are made by nailing 2 by 4's edgewise against the wall and on the floor. On the face of the 2 by 4's strips 1 by 3 inches spaced about 3 inches apart are securely nailed.

The racks on the floor should not be nailed to the floor, but should be made removable in order to facilitate cleaning.

The racks against the walls are for the purpose of permitting the air to circulate around the meat.

The doors are made of three thicknesses of boards similar to those used in lining the room, nailed to a frame made of dressed 2 by 3's. The frame is first made and covered with a thickness of boards. The box thus formed is filled with shavings and covered with boards. Turn the door over, lay a sheet of paper on the boards, and add another thickness of boards. The edges of the door are to be beveled

to fit the door opening. The door must be made smaller than the opening to allow for the canvas and felt that are to be nailed all around the edges of the door and around the door opening. The hinges to hang the door should be extra heavy **T** hinges. The outside of the building should be painted three coats with an oil paint. The efficiency of the house depends upon the tightness with which it is built, and to assist in keeping it tight it is necessary to paint the outside to keep moisture out of the boards, which would cause them to swell and pull away from the inner boards. The paint will also help to keep the boards from the shrinking caused by heat from the sun. The inside of the building should be shellacked or varnished with a waterproof varnish. The varnish will keep the boards from absorbing moisture and causing trouble and will also permit the house to be easily cleaned. The house should be thoroughly cleaned immediately after the meat has been removed.

BILL OF MATERIALS.

FRAME.

- 2 pieces 2 by 6 inches, 10 feet long, for girders, rough.
- 2 pieces 2 by 6 inches, 14 feet long, for joists, rough.
- 3 pieces 2 by 6 inches, 9 feet long, for rafters, rough.
- 2 cedar posts, 6-inch diameter, 6 feet long.
- 1 piece 2 by 4 inches, 6 feet long, stud K, dressed.
- 1 piece 2 by 4 inches, 7 feet long, stud L, dressed.
- 1 piece 2 by 4 inches, 7 feet long, stud I, dressed.
- 3 pieces 2 by 4 inches, 10 feet long, for plates and pieces G and M, dressed.
- 3 pieces 2 by 4 inches, 14 feet long, for pieces F, H, M, Q, and framing for doors, dressed.
- 800 feet b. m. tongue-and-groove flooring, dressed.
- 25 linear feet 1 by 3 inches, for door stop, dressed.
- 1 piece, 2 by 4 inches, 10 feet long, for beveled jamb of doors, dressed.
- 2 pieces, 2 by 3 inches, 14 feet long, for door frames, dressed.

ICE BUNKERS.

- 1 piece, 2 by 4 inches, 6 feet long, for supports, dressed.
- 7 pieces, 2 by 4 inches, 4 feet long, for floor beams, dressed.
- 1 piece, 1 by 4 inches, 8 feet long, for ice stop, dressed.

FLOOR AND WALL RACKS.

- 3 pieces, 2 by 4 inches, 7 feet long, for walls, dressed.
- 2 pieces, 2 by 4 inches, 10 feet long, for floor, dressed.
- 9 pieces, 1 by 3 inches, 14 feet long, slats for ice bunker and wall and floor racks, dressed.

HARDWARE, ETC.

- 3 extra-heavy **T** hinges, 18 inches long, and screws.
- 1 pair extra-heavy **T** hinges, 12 inches long, and screws.
- 1 pair 6-inch handles and screws.
- 25 pounds 6-penny flooring nails, wire.

5 pounds 10-penny wire nails, common.

5 ounces of 3-ounce tacks.

1 sheet corrugated galvanized iron, 2 feet 6 inches by 4 feet.

1 piece 3-inch galvanized-iron gutter, 3 feet 4 inches long, with 3 straps $\frac{3}{4}$ inch wide by 8 inches long, to fasten gutter to ice floor.

1 piece $\frac{3}{4}$ -inch gas pipe, galvanized, 4 feet 6 inches long.

24 yards canvas or heavy duck, 9 inches wide.

20 yards felt, 6 inches wide, for padding under canvas.

2 gallons waterproof varnish.

2 gallons lead and oil paint.

400 square feet of insulating paper.

70 square feet roofing paper with nails and pitch.

600 pounds dry mill shavings.

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